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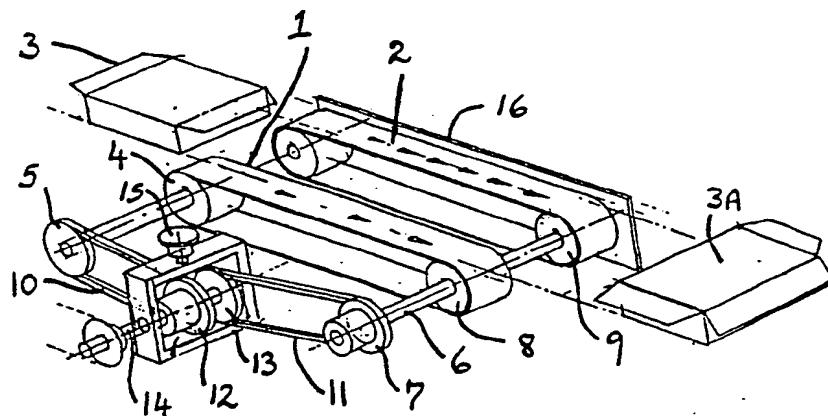
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Gloucestershire, United Kingdom(51) INT CL⁴
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(54) Package turning devices

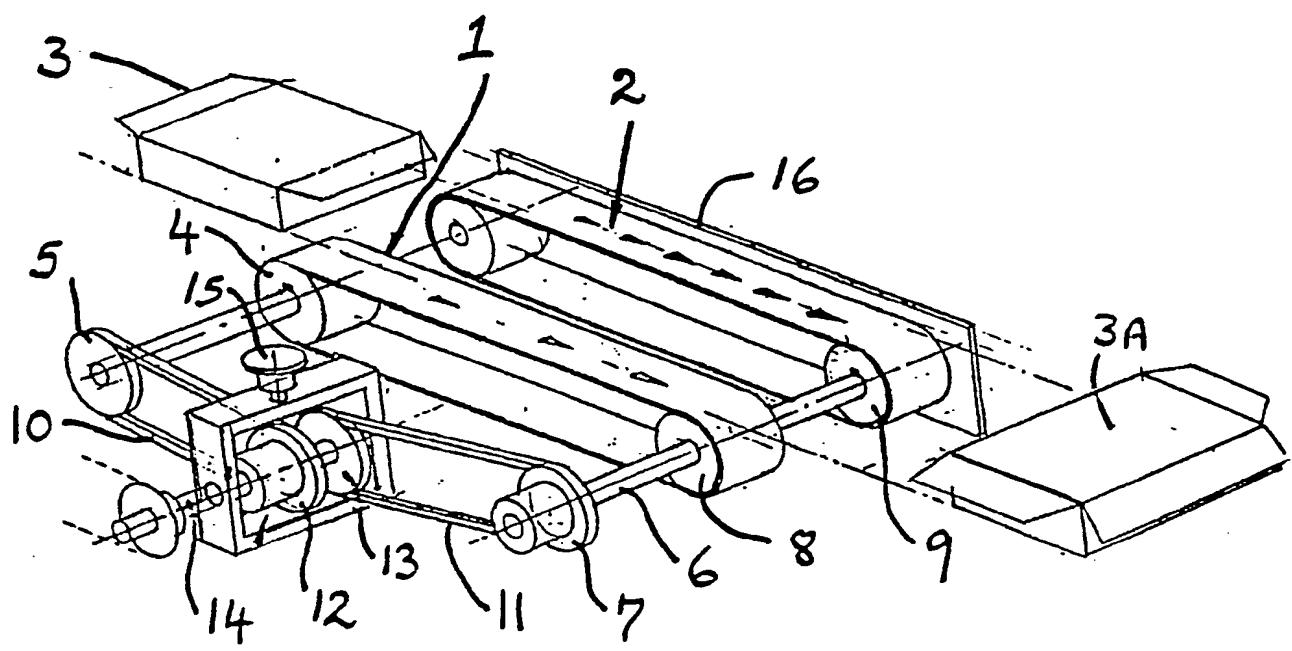
(57) A pair of belts 1 and 2 of a conveyor are driven at mutually different speeds so that as a package 3 is fed along the belts it is progressively rotated through the desired angle. The relative speed difference may be adjustable by means of adjustable pulley wheels. The spacing between the belts may also be adjustable.



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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.



"Improvements relating to Package Turning Devices"

There is often a need with conveyor systems to cause a package being conveyed to be moved into a different orientation for a later stage of a package forming or loading operation. It can be difficult to achieve 5 precise realignment of a package into a desirable new attitude without fairly complicated or space-consuming equipment.

It is an object of this invention to provide a form of package turning device which is able to cause a 10 package to be realigned accurately and over a short conveying distance.

According to the invention there is provided a package turning device comprising a conveyor in the form of a pair of belts disposed either side of the 15 longitudinal conveyor line, and means for driving the two belts at mutually differing speeds.

When a package moves on to this conveyor, because the two belts will be driven at differing speeds one edge of the package will be caused to move at a slower 20 rate than the other edge so that the package is automatically rotated. For a package of a particular size and shape the length of the conveying belts and their relative speeds can be so chosen as to ensure that the

package is rotated through a desired angle, for example 90°.

Ideally the driving means will be adjustable to vary the relative speed difference between the two belts, so as to be able to modify the apparatus to suit packages of various sizes. The driving means may incorporate adjustable pulley wheels interconnected with drive pulleys for the drive belts, in order to achieve this end.

Advantageously the spacing between the belts will be variable to accomodate a variety of package sizes.

The invention may be performed in various ways and a preferred embodiment thereof will now be described also with reference to the accompanying drawing which illustrates a conveyor system constructed in accordance with the invention.

The conveyor system shown in the drawing incorporates a pair of drive belts 1 and 2 on to which a package 3 will be led from another conveyor. Belt 1 is driven by a drive roller 4 interconnected with a drive pulley 5. A shaft 6 leading from a further drive pulley 7 passes through a freely rotating roller 8 which supports the belt 1 and is then connected to a drive roller 9 for the belt 2. The drive pulleys 5 and 7 are driven by belts 10 and 11 respectively from a pair of pulleys 12 and 13 carried on an input drive shaft 14.

The pulleys 7 and 12 are adjustable in that as the belts 10 and 11 are tightened the effective circumferences of the pulleys 12 and 7 are reduced. This variation of the drive to the belts 1 and 2 can be achieved by rotation 5 of a control knob 15.

When the package 3 arrives on belts 1 and 2, because belt 2 is travelling at a faster speed, the edge of the package sitting on that belt will be caused to move faster than the other edge, with the result that the 10 package is caused to rotate. The gearing ratios are such that the belts 1 and 2 are driven at mutually different speeds and the degree of difference in speeds between the two belts can be varied at will to suit a particular package which is to be conveyed. When the 15 apparatus is suitably adjusted (by operation of the control knob 15) the package can be caused to rotate, during its passage over the belts 1 and 2, through 90° into the attitude as indicated at 3A.

Of course other suitable means for causing the two 20 belts 1 and 2 to be driven at the required different speeds can be employed rather than that specifically illustrated in the drawing.

The apparatus also incorporates a side wall 16 which supports the drive roller 9 and the idler roller for the 25 other end of the belt 2. The side wall 16, and associated rollers, is adjustable in the direction at

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right angles to the direction of movement of belts 1 and 2, so as to vary the spacing between the two belts, in order to enable packages of varying sizes to be accommodated.

CLAIMS

1. A package turning device comprising a conveyor in the form of a pair of belts disposed either side of the longitudinal conveyor line, and means for driving the two belts at mutually differing speeds.
2. A device according to claim 1, wherein the driving means is adjustable to vary the relative speed difference between the two belts.
3. A device according to claim 2, wherein the driving means incorporates adjustable pulley wheels interconnected with drive pulleys for the drive belts.
4. A device according to any one of claims 1 to 3, wherein the spacing between the belts is variable.
5. A package turning device substantially as herein described with reference to the accompanying drawings.

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